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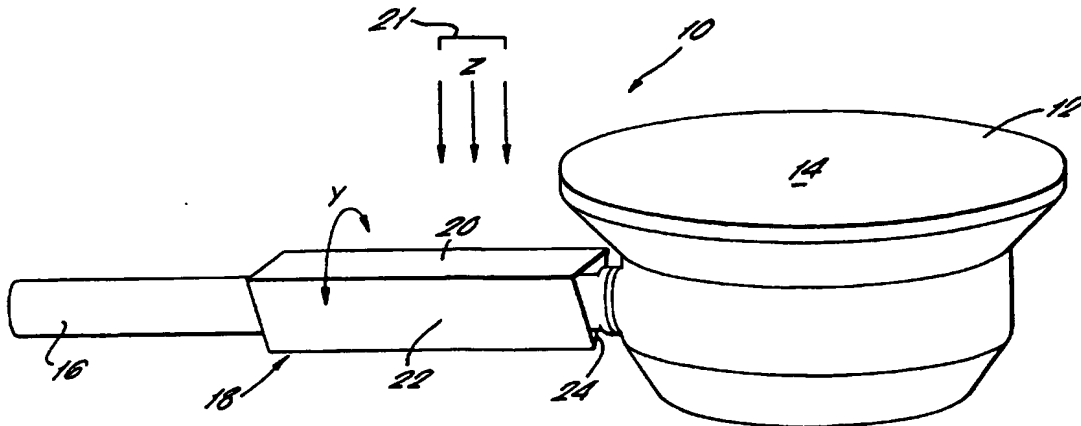
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(54) Title: METHOD AND APPARATUS FOR REDUCING CROSS CONTAMINATION OF SPECIES DURING ION IMPLANTATION



(57) Abstract: A wafer support for an ion implanter includes a wafer holder and a support arm for the holder in the implant chamber. A portion of the support arm adjacent the wafer holder is at least intermittently exposed to the ion beam during implantation, as a result of the relative scanning of the ion beam and the wafer holder. An arm shield mechanism has a plurality of shielding surfaces which can be selectively disposed to receive the ion beam to protect the exposed portion of the support arm. The shielding surfaces may form a sleeve arranged over the arm which may be rotatable above the arm to present selected surfaces to the ion beam. Cross contamination when successively implanting different species can be reduced by presenting different shield surfaces to the beam.

INTERNATIONAL SEARCH REPORT

Int. Application No

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A. CLASSIFICATION OF SUBJECT MATTER
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According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 407 985 A (APPLIED MATERIALS INC) 16 January 1991 (1991-01-16) cited in the application column 2, line 55 - column 4, line 40; figures	10, 13
A	WO 01/013410 A (CORDTS BERNHARD F III ; IBIS TECHNOLOGY INC (US); BLAKE JULIAN G (US);) 22 February 2001 (2001-02-22) page 11, line 8 - page 12, line 2; figure 15	1, 10, 13

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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INTERNATIONAL SEARCH REPORT

Information on patent family members

Inventor's Application No
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Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 0407985	A	16-01-1991	US 4937206 A	26-06-1990
			DE 69031886 D1	12-02-1998
			DE 69031886 T2	13-08-1998
			EP 0407985 A1	16-01-1991
			JP 2945091 B2	06-09-1999
			JP 3046741 A	28-02-1991
			US 5476520 A	19-12-1995
WO 0113410	A	22-02-2001	US 6423975 B1	23-07-2002
			US 6155436 A	05-12-2000
			US 6433342 B1	13-08-2002
			US 6452195 B1	17-09-2002
			AU 6784800 A	13-03-2001
			EP 1208587 A1	29-05-2002
			JP 2003531471 T	21-10-2003
			WO 0113410 A1	22-02-2001
			US 2003052282 A1	20-03-2003